

Supplementary Table 1. Population characteristics by categories of dietary thiamine intake \*

	Dietary thiamine intake, mg/day							Statistic	P value
	<0.4	0.4-0.6	0.6-0.8	0.8-1.0	1.0-1.2	1.2-1.4	≥1.4		
N	30	284	843	905	547	269	228		
Age, years	70.6 (61.6, 77.2)	67.7 (59.8, 74.1)	63.0 (58.3, 68.9)	60.8 (57.2, 66.9)	59.4 (57.1, 65.2)	58.5 (56.6, 63.4)	58.4 (56.8, 63.3)	KWT	<0.001
Female	25 (83.3)	214 (75.4)	511 (60.6)	476 (52.6)	232 (42.4)	107 (39.8)	70 (30.7)	$\chi^2$ , 176.43	<0.001
Body mass index, kg/m <sup>2</sup>	21.4 (3.6)	22.4 (3.9)	22.9 (3.5)	23.0 (3.6)	23.3 (3.5)	23.2 (3.9)	23.1 (3.3)	F, 3.05	0.006
Smoking	7 (23.3)	66 (23.2)	234 (27.8)	282 (31.2)	190 (34.7)	107 (39.8)	101 (44.3)	$\chi^2$ , 43.44	<0.001
Alcohol drinking	4 (13.3)	47 (16.5)	222 (26.6)	284 (32.1)	214 (39.3)	114 (42.5)	105 (46.5)	$\chi^2$ , 95.61	<0.001
Systolic blood pressure, mmHg	134.6 (22.7)	131.8 (24.3)	131.1 (20.9)	130.0 (21.0)	129.9 (20.2)	128.6 (17.9)	126.8 (20.3)	F, 1.96	0.068
Diastolic blood pressure, mmHg	82.3 (14.2)	81.2 (14.5)	81.3 (11.5)	81.8 (12.3)	82.1 (11.9)	80.7 (11.3)	79.3 (12.5)	F, 1.69	0.120
Antihypertensive medicine	4 (13.3)	38 (13.4)	93 (11.1)	96 (10.7)	66 (12.1)	31 (11.6)	16 (7.0)	$\chi^2$ , 6.22	0.399
Self-report hypertension	5 (16.7)	52 (18.4)	114 (13.6)	132 (14.8)	84 (15.5)	41 (15.4)	21 (9.3)	$\chi^2$ , 9.67	0.139
Self-report diabetes	0 (0.0)	13 (4.6)	28 (3.4)	32 (3.6)	22 (4.1)	7 (2.7)	4 (1.8)	$\chi^2$ , 5.3	0.506
Urban residents	11 (36.7)	120 (42.3)	322 (38.2)	338 (37.3)	202 (36.9)	100 (37.2)	63 (27.6)	$\chi^2$ , 12.43	0.053
Region								$\chi^2$ , 164.2	<0.001
north	11 (36.7)	66 (23.2)	169 (20.0)	128 (14.1)	70 (12.8)	28 (10.4)	27 (11.8)		
central	9 (30.0)	106 (37.3)	327 (38.8)	421 (46.5)	284 (51.9)	162 (60.2)	175 (76.8)		
south	10 (33.3)	112 (39.4)	347 (41.2)	356 (39.3)	193 (35.3)	79 (29.4)	26 (11.4)		
Occupation								$\chi^2$ , 108.35	<0.001
farmer	1 (3.4)	56 (19.9)	245 (29.8)	291 (32.8)	182 (34.0)	108 (40.9)	108 (48.9)		
worker	0 (0.0)	6 (2.1)	19 (2.3)	31 (3.5)	18 (3.4)	9 (3.4)	8 (3.6)		
inoccupation	26 (89.7)	200 (70.9)	472 (57.4)	452 (51.0)	264 (49.3)	114 (43.2)	78 (35.3)		
other	2 (6.9)	20 (7.1)	87 (10.6)	113 (12.7)	72 (13.4)	33 (12.5)	27 (12.2)		
Education								$\chi^2$ , 100.01	<0.001
illiteracy	18 (66.7)	177 (65.3)	433 (53.0)	435 (50.1)	226 (42.4)	93 (36.3)	98 (44.1)		
primary school	5 (18.5)	55 (20.3)	210 (25.7)	204 (23.5)	156 (29.3)	87 (34.0)	44 (19.8)		

middle school	3 (11.1)	16 (5.9)	81 (9.9)	108 (12.4)	83 (15.6)	50 (19.5)	35 (15.8)		
high school or above	1 (3.7)	23 (8.5)	93 (11.4)	122 (14.0)	68 (12.8)	26 (10.2)	45 (20.3)		
Physical activity, MET-hours/week	19.7 (1.3, 59.3)	38.9 (11.6, 112.0)	64.3 (18.7, 153.2)	77.5 (24.0, 164.8)	68.8 (24.7, 170.0)	89.5 (28.4, 184.5)	94.0 (32.5, 198.2)	KWT	<0.001
<b>Dietary</b>									
Fiber, g/day	4.3 (3.3, 6.0)	6.3 (5.1, 7.9)	7.8 (6.2, 10.0)	9.4 (7.6, 11.9)	11.2 (9.1, 14.0)	12.7 (10.2, 15.6)	17.0 (13.7, 21.9)	KWT	<0.001
Sodium, g/day	3.8 (2.9, 5.3)	3.9 (3.0, 5.4)	4.3 (3.3, 5.8)	4.7 (3.7, 6.1)	5.1 (3.8, 6.8)	5.0 (4.1, 6.7)	5.3 (4.0, 7.4)	KWT	<0.001
Potassium, g/day	0.6 (0.6, 1.0)	1.0 (0.9, 1.2)	1.3 (1.1, 1.5)	1.5 (1.3, 1.7)	1.7 (1.5, 1.9)	1.8 (1.6, 2.1)	2.1 (1.8, 2.6)	KWT	<0.001
Carbohydrate, g/day	152.9 (43.6)	210.5 (45.5)	261.0 (54.0)	296.8 (61.7)	330.6 (70.2)	366.2 (81.2)	433.0 (108.4)	F, 375.94	<0.001
Protein, g/day	27.7 (10.6)	42.4 (10.2)	52.4 (10.2)	62.2 (12.6)	70.4 (13.8)	77.5 (15.3)	88.8 (19.0)	F, 495.65	<0.001
Fat, g/day	47.4 (29.5)	50.7 (19.0)	63.1 (22.6)	71.2 (25.5)	78.2 (29.8)	81.3 (32.3)	81.8 (39.0)	F, 60.79	<0.001
<b>Cognitive assessment</b>									
Global score at baseline, points	9.5 (6.1)	11.9 (5.9)	13.9 (6.1)	14.8 (6.0)	15.3 (6.0)	16.0 (6.0)	15.5 (6.3)	F, 18.91	<0.001
Global score at last survey, points	7.6 (5.0)	9.2 (6.2)	11.3 (6.4)	12.4 (6.5)	13.0 (6.5)	13.5 (6.2)	13.9 (6.2)	F, 22.01	<0.001
Composite score at baseline, SU	-0.53 (0.85)	-0.18 (0.82)	0.08 (0.83)	0.20 (0.81)	0.27 (0.80)	0.35 (0.80)	0.29 (0.83)	F, 18.97	<0.001
Composite score at last survey, SU	-0.80 (0.71)	-0.56 (0.86)	-0.27 (0.88)	-0.12 (0.88)	-0.03 (0.89)	0.04 (0.83)	0.09 (0.84)	F, 22.86	<0.001

\*For continuous variables, values are presented as mean (SD) or median (25 percentile, 75 percentile), for categorical variables, values are present as N (%). **KWT**: Kruskal Wallis test, **SU** = Standard units by averaging z scores

**Supplementary Table 2. The association of energy-adjusted thiamine intake with cognitive decline using two piecewise linear regression\***

Changing point, mg/day	N	mean (SD)	$\beta$ (95%CI)	P value	R-square
estimate (95%CI)					
<i>Decline rate in global cognitive scores, points/5 years</i>					
Model 1					
0.62 (0.43, 0.81)					
<0.62	142	0.8 (12.6)	-8.37 (-35.17, 18.43)	0.542	
$\geq$ 0.62	2964	2.3 (11.0)	2.90 (1.18, 4.63)	<b>&lt;0.001</b>	
Model 2					
0.62 (0.27, 0.97)					
<0.62	142	0.8 (12.6)	-7.99 (-40.89, 24.91)	0.635	
$\geq$ 0.62	2964	2.3 (11.0)	4.10 (2.14, 6.07)	<b>&lt;0.001</b>	
<i>Decline rate in composite cognitive scores, SU/5 years</i>					
Model 1					
0.62 (0.44, 0.80)					
<0.62	142	0.15 (1.63)	-1.41 (-4.92, 2.10)	0.433	
$\geq$ 0.62	2964	0.32 (1.43)	0.31 (0.09, 0.54)	<b>0.007</b>	
Model 2					
0.62 (0.32, 0.91)					
<0.62	142	0.15 (1.63)	-1.00 (-5.38, 3.38)	0.656	
$\geq$ 0.62	2964	0.32 (1.43)	0.47 (0.22, 0.73)	<b>&lt;0.001</b>	

\*Model 1 was adjusted for age, sex, global score, as well as the intakes of carbohydrate, protein and fat;

Model 2 was further adjusted for smoking, alcohol drinking, body mass index, systolic blood pressure, diastolic blood pressure, education levels, occupation, region, urban or rural residents, self-reported diabetes, antihypertensive medicine, physical activity, as well as the intakes of fiber, sodium and potassium.

**SU** = Standard units by averaging z scores

**Supplementary Table 3. The association between thiamine intake and cognitive decline by further adjustment for the intakes of riboflavin and niacin\***

Thiamine intake, mg/day	N	Mean (SD)	Model 1			Model 2		
			$\beta$ (95%CI)	P value	P-BH	$\beta$ (95%CI)	P value	P-BH
<i>Decline rate in global cognitive scores, points/5 years</i>								
Group 1								
<0.4	30	2.6 (13.1)	0.98 (-2.95, 4.92)	0.625	0.625	0.96 (-2.98, 4.90)	0.633	0.633
0.4-0.6	284	3.3 (11.1)	1.08 (-0.37, 2.53)	0.144	0.216	1.08 (-0.38, 2.53)	0.147	0.220
0.6-0.8	843	2.3 (10.8)	ref			ref		
0.8-1.0	905	1.8 (10.5)	0.45 (-0.57, 1.48)	0.386	0.463	0.46 (-0.57, 1.49)	0.382	0.458
1.0-1.2	547	2.2 (12.0)	1.58 (0.30, 2.86)	<b>0.015</b>	<b>0.031</b>	1.60 (0.31, 2.89)	<b>0.015</b>	<b>0.030</b>
1.2-1.4	269	3.0 (11.0)	3.51 (1.82, 5.21)	<b>&lt;0.001</b>	<b>&lt;0.001</b>	3.53 (1.83, 5.23)	<b>&lt;0.001</b>	<b>&lt;0.001</b>
$\geq 1.4$	228	1.5 (12.6)	3.25 (1.18, 5.33)	<b>0.002</b>	<b>0.006</b>	3.29 (1.19, 5.39)	<b>0.002</b>	<b>0.006</b>
R-square			0.312			0.312		
Group 2								
<0.6	314	3.2 (11.3)	0.91 (-0.46, 2.28)	0.194	0.194	0.90 (-0.47, 2.28)	0.198	0.198
0.6-1.0	1748	2.1 (10.6)	ref			ref		
1.0-1.2	547	2.2 (12.0)	1.29 (0.22, 2.36)	<b>0.018</b>	<b>0.027</b>	1.31 (0.23, 2.38)	<b>0.017</b>	<b>0.026</b>
$\geq 1.2$	497	2.3 (11.7)	3.05 (1.70, 4.41)	<b>&lt;0.001</b>	<b>&lt;0.001</b>	3.08 (1.71, 4.45)	<b>&lt;0.001</b>	<b>&lt;0.001</b>
R-square			0.312			0.312		
<i>Decline rate in composite cognitive scores, SU/5 years</i>								
Group 1								
<0.4	30	0.39 (1.72)	0.14 (-0.37, 0.66)	0.586	0.586	0.14 (-0.38, 0.66)	0.591	0.591
0.4-0.6	284	0.47 (1.50)	0.15 (-0.04, 0.34)	0.113	0.170	0.15 (-0.04, 0.34)	0.114	0.171
0.6-0.8	843	0.33 (1.40)	ref			ref		
0.8-1.0	905	0.27 (1.37)	0.06 (-0.07, 0.19)	0.382	0.459	0.06 (-0.07, 0.20)	0.380	0.456
1.0-1.2	547	0.30 (1.53)	0.19 (0.02, 0.36)	<b>0.026</b>	0.051	0.19 (0.02, 0.36)	<b>0.025</b>	<b>0.050</b>
1.2-1.4	269	0.38 (1.38)	0.39 (0.17, 0.62)	<b>&lt;0.001</b>	<b>0.003</b>	0.40 (0.17, 0.62)	<b>&lt;0.001</b>	<b>0.003</b>
$\geq 1.4$	228	0.19 (1.62)	0.36 (0.09, 0.63)	<b>0.010</b>	<b>0.030</b>	0.36 (0.09, 0.64)	<b>0.010</b>	<b>0.028</b>
R-square			0.296			0.296		
Group 2								
<0.6	314	0.46 (1.52)	0.13 (-0.05, 0.31)	0.153	0.153	0.13 (-0.05, 0.31)	0.154	0.154
0.6-1.0	1748	0.30 (1.38)	ref			ref		
1.0-1.2	547	0.30 (1.53)	0.15 (0.01, 0.29)	<b>0.033</b>	<b>0.049</b>	0.16 (0.01, 0.30)	<b>0.032</b>	<b>0.047</b>
$\geq 1.2$	497	0.29 (1.50)	0.33 (0.15, 0.51)	<b>&lt;0.001</b>	<b>&lt;0.001</b>	0.34 (0.16, 0.52)	<b>&lt;0.001</b>	<b>&lt;0.001</b>
R-square			0.296			0.296		

\*Model 1 was adjusted for age, sex, global score, smoking, alcohol drinking, body mass index, systolic blood pressure, diastolic blood pressure, education levels, occupation, region, urban or rural residents, self-reported diabetes, antihypertensive

medicine, physical activity, as well as the intakes of fiber, sodium, potassium, carbohydrate, protein and fat;

Model 2 was further adjusted for riboflavin and niacin.

**P-BH** = Multiple testing corrected *P*-value by Benjamini-Hochberg method; **SU** = Standard units by averaging z scores

**Supplementary Table 4. The association between thiamine intake and cognitive decline by further adjustment for food consumption of whole grains, legumes, unprocessed red meat and processed red meat \***

Thiamine intake, mg/day	N	Mean (SD)	Model 1			Model 2		
			$\beta$ (95%CI)	P value	P-BH	$\beta$ (95%CI)	P value	P-BH
<i>Decline rate in global cognitive scores, points/5 years</i>								
Group 1								
<0.4	30	2.6 (13.1)	0.98 (-2.95, 4.92)	0.625	0.625	0.90 (-3.05, 4.85)	0.656	0.656
0.4-0.6	284	3.3 (11.1)	1.08 (-0.37, 2.53)	0.144	0.216	1.07 (-0.39, 2.52)	0.150	0.226
0.6-0.8	843	2.3 (10.8)	ref			ref		
0.8-1.0	905	1.8 (10.5)	0.45 (-0.57, 1.48)	0.386	0.463	0.43 (-0.60, 1.47)	0.413	0.495
1.0-1.2	547	2.2 (12.0)	1.58 (0.30, 2.86)	<b>0.015</b>	<b>0.031</b>	1.57 (0.27, 2.87)	<b>0.018</b>	<b>0.037</b>
1.2-1.4	269	3.0 (11.0)	3.51 (1.82, 5.21)	<b>&lt;0.001</b>	<b>&lt;0.001</b>	3.49 (1.76, 5.22)	<b>&lt;0.001</b>	<b>&lt;0.001</b>
$\geq 1.4$	228	1.5 (12.6)	3.25 (1.18, 5.33)	<b>0.002</b>	<b>0.006</b>	3.05 (0.87, 5.23)	<b>0.006</b>	<b>0.018</b>
R-square			0.312			0.313		
Group 2								
<0.6	314	3.2 (11.3)	0.91 (-0.46, 2.28)	0.194	0.194	0.89 (-0.49, 2.27)	0.207	0.207
0.6-1.0	1748	2.1 (10.6)	ref			ref		
1.0-1.2	547	2.2 (12.0)	1.29 (0.22, 2.36)	<b>0.018</b>	<b>0.027</b>	1.30 (0.22, 2.38)	<b>0.018</b>	<b>0.027</b>
$\geq 1.2$	497	2.3 (11.7)	3.05 (1.70, 4.41)	<b>&lt;0.001</b>	<b>&lt;0.001</b>	2.98 (1.59, 4.38)	<b>&lt;0.001</b>	<b>&lt;0.001</b>
R-square			0.312			0.313		
<i>Decline rate in composite cognitive scores, SU/5 years</i>								
Group 1								
<0.4	30	0.39 (1.72)	0.14 (-0.37, 0.66)	0.586	0.586	0.13 (-0.39, 0.65)	0.621	0.621
0.4-0.6	284	0.47 (1.50)	0.15 (-0.04, 0.34)	0.113	0.170	0.15 (-0.04, 0.34)	0.123	0.185
0.6-0.8	843	0.33 (1.40)	ref			ref		
0.8-1.0	905	0.27 (1.37)	0.06 (-0.07, 0.19)	0.382	0.459	0.06 (-0.08, 0.19)	0.399	0.479
1.0-1.2	547	0.30 (1.53)	0.19 (0.02, 0.36)	<b>0.026</b>	0.051	0.19 (0.02, 0.36)	<b>0.028</b>	0.056
1.2-1.4	269	0.38 (1.38)	0.39 (0.17, 0.62)	<b>&lt;0.001</b>	<b>0.003</b>	0.39 (0.17, 0.62)	<b>&lt;0.001</b>	<b>0.004</b>
$\geq 1.4$	228	0.19 (1.62)	0.36 (0.09, 0.63)	<b>0.010</b>	<b>0.030</b>	0.34 (0.06, 0.63)	<b>0.019</b>	0.056
R-square			0.296			0.287		
Group 2								
<0.6	314	0.46 (1.52)	0.13 (-0.05, 0.31)	0.153	0.153	0.13 (-0.05, 0.31)	0.170	0.170
0.6-1.0	1748	0.30 (1.38)	ref			ref		
1.0-1.2	547	0.30 (1.53)	0.15 (0.01, 0.29)	<b>0.033</b>	<b>0.049</b>	0.16 (0.01, 0.30)	<b>0.032</b>	<b>0.047</b>
$\geq 1.2$	497	0.29 (1.50)	0.33 (0.15, 0.51)	<b>&lt;0.001</b>	<b>&lt;0.001</b>	0.33 (0.14, 0.51)	<b>&lt;0.001</b>	<b>0.001</b>
R-square			0.296			0.297		

\*Model 1 adjusted for age, sex, global score, smoking, alcohol drinking, body mass index, systolic blood pressure, diastolic blood pressure, education levels, occupation,

region, urban or rural residents, self-reported diabetes, antihypertensive medicine, physical activity, as well as the intakes of fiber, sodium, potassium, carbohydrate, protein and fat;

Model 2 further adjusted for the food consumptions of whole grain, legume, unprocessed red meat and processed red meat.

**P-BH** = Multiple testing corrected *P*-value by Benjamini-Hochberg method; **SU** = Standard units by averaging z scores

**Supplementary Table 5. The association between dietary thiamine (tertiles) intake and cognitive decline using mixed linear regression\***

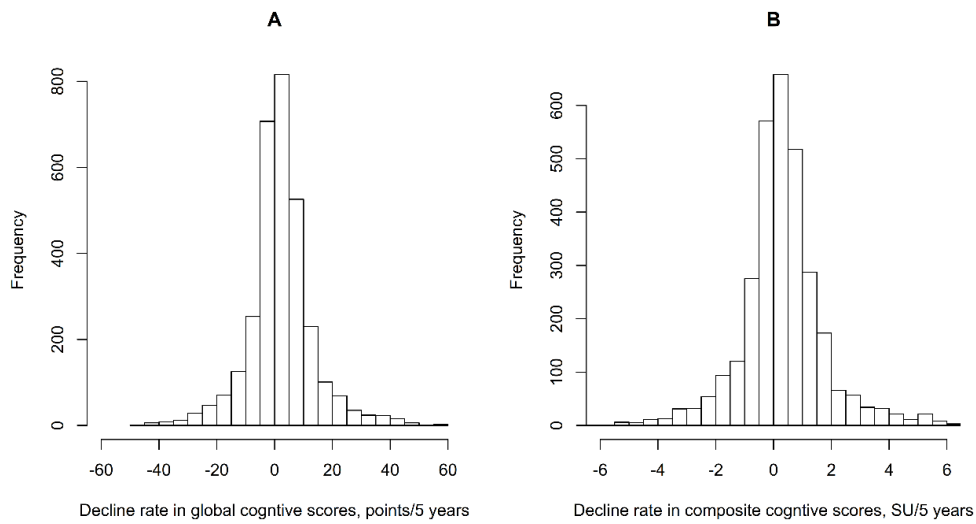
Tertiles of dietary thiamine intake, mg/day	Change rate in global cognitive scores, points/5 years		Change rate in composite cognitive scores, SU/5 years	
	$\beta$ (95%CI)	<i>P</i> value	$\beta$ (95%CI)	<i>P</i> value
<0.71	-0.51 (-0.84, -0.18)	<b>0.002</b>	-0.07 (-0.11, -0.03)	<b>0.002</b>
0.71-1.01	ref		ref	
$\geq 1.01$	-0.44 (-0.81, -0.08)	<b>0.018</b>	-0.06 (-0.11, -0.01)	<b>0.023</b>
R-square	0.289		0.311	

\*Adjusted for age, sex, urban or rural residents, education levels, occupations and regions at baseline, as well as the repeat measured smoking, alcohol drinking, body mass index, systolic blood pressure, diastolic blood pressure, self-reported diabetes, antihypertensive medicine, physical activity, and the dietary intakes of fiber, sodium, potassium, carbohydrate, protein and fat during the follow-up.

The intercept and slope were both fitted as random effects. Interaction terms of time (from baseline) and tertiles of thiamine intake were included in the model, and the regression coefficient can be interpreted as the change rate in global and composite cognitive scores. Negative  $\beta$  values represent how much cognitive score declines over 5 years, and positive  $\beta$  values represent how much cognitive score increases over 5 years.

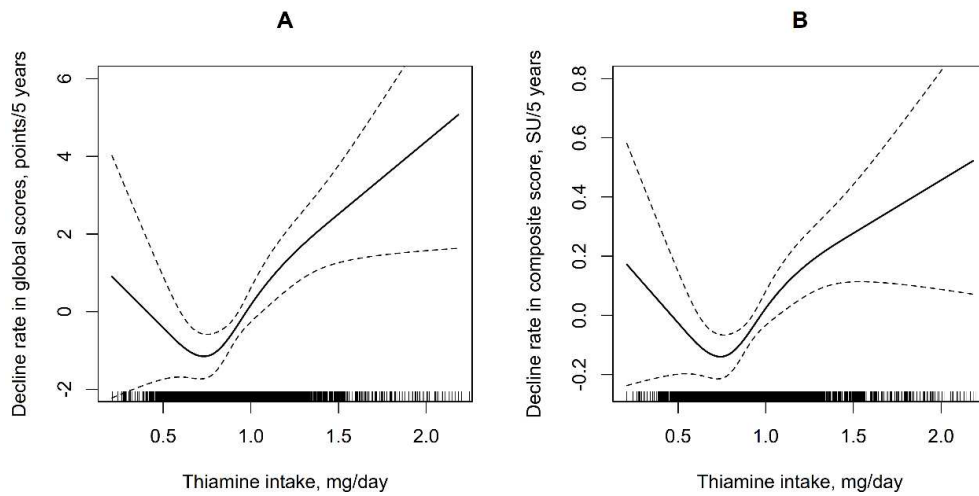
**SU** = Standard units by averaging z scores





**Supplementary Figure 1. The distribution of the 5-year decline rate in global (A) and composite (B) cognitive score**

SU = Standard units by averaging z scores



**Supplementary Figure 2. The relationship between dietary thiamine intake and the 5-year decline rate in global (A) and composite (B) cognitive scores \***

\*Adjusted for age, sex, global score, smoking, alcohol drinking, body mass index, systolic blood pressure, diastolic blood pressure, education levels, occupation, region, urban or rural residents, self-reported diabetes, antihypertensive medicine, physical activity, as well as the intakes of fiber, sodium, potassium, carbohydrate, protein and fat. **SU** = Standard units by averaging z scores